

Listing of the Claims:

1 1. (Currently amended) An apparatus for transferring multiplexed multiple multi-
2 bit messages across a bit level network, said apparatus comprising:
3 a network interface for accessing the bit level network, said network interface
4 configured to transmit and receive a multi-bit message at a preselected one of a plurality
5 of time-division multiplex addresses on each channel of a preselected channel set;
6 a processor in communication with said network interface;
7 a memory in communication with said processor; and
8 a second interface for connecting either an input or an output device to said
9 processor;
10 whereby the multiple multi-bit messages are transmitted over said network
11 interface.

1 2. (Original) The apparatus of Claim 1 wherein said network interface includes a
2 clock signal and a data signal.

1 3. (Currently amended) The apparatus of Claim 2 wherein said data signal is a
2 serial data stream synchronized with [the] said clock signal.

1 4. (Currently amended) The apparatus of Claim 2 wherein said data signal
2 includes said multi-bit message, said multi-bit message including a command segment
3 and a data segment, said command segment includes at least an operator and an operand.

1 5. (Original) The apparatus of Claim 4 wherein said command segment is a serial
2 bitstream starting at a specified address determined by said clock signal on a first channel
3 of said preselected channel set and said data segment is a serial bitstream starting at said
4 specified address on a second channel of said preselected channel set.

1 6. (Original) The apparatus of Claim 4 wherein said operator includes a read
2 request, said memory at a location specified by said operand contains data which is
3 copied to said data segment.

1 7. (Original) The apparatus of Claim 4 wherein said operator includes a write
2 request, said data segment contains data which is copied to said memory at a location
3 specified by said operand.

1 8. (Currently amended) A method for transferring large amounts of complex data
2 between a data link module and a host across a bit level network, said method comprising
3 the steps of:
4 (a) configuring a channel set to said data link module;
5 (b) configuring a frame address to said data link module;
6 (c) sending a multi-bit message from said host to said data link module, said
7 multi-bit message including a message command segment on a first channel of said
8 channel set at said data link module frame address and a message data segment on a
9 second channel of said channel set at said data link module frame address, said message
10 command segment including a register operand and at least either of a read request or a
11 write request;
12 (d) accessing a register in said data link module specified in said register operand
13 as a specified register;
14 (e) sending a reply from said data link module to said host, said reply including a
15 reply command segment on a first channel of said channel [number pair] set at said data
16 link module frame address and a reply data segment on a second channel of said channel
17 [number pair] set at said data link module frame address.

1 9. (Original) The method of Claim 8 wherein said message command segment
2 includes a read request, said step of accessing a register in said data link module further
3 comprises the step of reading a value from said specified register as a read value.

1 10. (Original) The method of Claim 9 wherein said reply command segment
2 equals said message command segment and said reply data segment contains said read
3 value.

1 11. (Original) The method of Claim 8 wherein said message command segment
2 includes a write request, said step of accessing a register in said data link module further
3 comprises the step of writing said message data segment to said specified register.

1 12. (Original) The method of Claim 11 wherein said reply command segment
2 equals said message command segment and said reply data segment equals said message
3 data segment.

1 13. (Currently amended) A data link module connected to a data bus and a master
2 clock line for use in a bit level network system having multiple data link modules, the
3 master clock line for generating a predetermined number of time slots for a complete
4 multiplexed channel, each time slot on the complete multiplexed channel associated with
5 an address location of at least one data link module or a data bit on the data bus, said data
6 link module comprising:
7 means for interfacing with either an input device or an output device;
8 means for receiving data from the data bus at a predetermined time slot on a first
9 multiplexed channel, said data being a multiplexed [multibit] multi-bit message including
10 at least a command segment and a data segment;
11 means for sending data to the data bus during said predetermined time slot on a
12 second multiplexed channel;
13 means for processing said data;
14 means for storing said data; and
15 means for retrieving said data.

1 14. (New) A method for transferring large amounts of complex data between a
2 data link module and a host across a bit level network, said method comprising the steps

3 of:

- 4 (a) configuring a channel set having at least two bit level time division
5 multiplexed channels to said data link module;
6 (b) configuring a frame address to said data link module;
7 (c) sending a message from said host to said data link module, said message
8 including a message command segment on a first channel of said channel set at said data
9 link module frame address and a message data segment on at least one other channel of
10 said channel set at said data link module frame address, said message command segment
11 including a register operand and at least either of a read request or a write request;
12 (d) accessing a register in said data link module specified in said register operand
13 as a specified register;
14 (f) sending a reply from said data link module to said host, said reply including a
15 reply command segment on a first channel of said channel set at said data link module
16 frame address and a reply data segment on at least one other channel of said channel set at
17 said data link module frame address.

1 15. (New) The method of Claim 14 wherein said message command segment
2 includes a read request, said step of accessing a register in said data link module further
3 comprises the step of reading a value from said specified register as a read value.

1 16. (New) The method of Claim 15 wherein said reply command segment equals
2 said message command segment and said reply data segment contains said read value.

1 17. (New) The method of Claim 14 wherein said message command segment
2 includes a write request, said step of accessing a register in said data link module further
3 comprises the step of writing said message data segment to said specified register.

1 18. (New) The method of Claim 17 wherein said reply command segment equals
2 said message command segment and said reply data segment equals said message data
3 segment.